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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,127	12/17/2001	Joseph Williams	2	4580

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EXAMINER	
ROBERTS, BRIAN S	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/023,127	WILLIAMS, JOSEPH	
	Examiner	Art Unit	
	Brian Roberts	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,14 and 16-25* is/are rejected.

7)☒ Claim(s) *13 and 15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's Amendment filed 12/27/2005 is acknowledged.
- Claims 1-25 remain pending.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2, 10, and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- In reference to claims 2, 10, and 17

The term "substantially conflict-free manner" in claim 2, 10, and 17 is a relative term which renders the claim indefinite. The term " substantially conflict-free manner" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent

granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4, 6-11, 16-19 and 21-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Dally (US 2001/0033569).

- In reference to claim 1, 6-7, 16, 21 and 23

In Figures 5 and 23, Dally teaches a mesh architecture including a plurality of inputs for receiving data to a cross-connect switch and a plurality of nodes interconnected utilizing half-duplex links where each node comprise:

- A receiver and transmitter or transceiver with an input and output interface for receiving and transmitting data
- An input time-slot-interchanger (106) coupled to the receiver over a half-duplex link
- An output time-slot-interchanger (106) coupled to the transmitter over a half-duplex link
- A controller (configSelect and configuration table) coupled to the receiver and transmitter to route data to an output of the cross-connect switch and an adjacent node in the mesh architecture

- In reference to claim 2, 17, as best understood

Dally teach a system and method that covers substantially all limitations of the parent claim. Dally further teaches hitless switching or routing the packets in a substantially conflict-free manner. [0042]

- In reference to claim 3, 18, and 25

In Figure 14, Dally further teaches a prior art embodiment where each node contains a FIFO (70) connected to the input TSI and output TSI to temporarily store the data during reordering. [0080]

- In reference to claim 4, 19, and 24

In Figure 23, Dally further teaches each node contains a connection map (100; 112) coupled to the controller to selectively route the data in the node in accordance with the information stored in the connection map.

- In reference to claim 8 and 22

In Figures 5 and 23, Dally further teaches a processor operative to:

- Precompute one or more routing sequences (primary and standby configuration tables) the routing sequences reducing a routing in the mesh architecture to a one-to-one routing (from one switch stage to a next switch stage) within each of one or more time-slots associated with the node [0042-0043]
- Reorder the one or more data samples within one or more source nodes in accordance with the precomputed routing sequences [0042-0043]
- Route the one or more data samples from the one or more source nodes (44) to one or more corresponding destination nodes (48) through the mesh

- Reorder the one or more data samples within the destination nodes (48), whereby the data samples are transmitted during a correct time-slot.

- In reference to claim 9

In Figures 5 and 23, Dally further teaches a method that includes:

- Precompute one or more routing sequences (primary and standby configuration tables) the routing sequences reducing a routing in the mesh architecture to a one-to-one routing (from one switch stage to a next switch stage) within each of one or more time-slots associated with the node [0042-0043]
- Reorder the one or more data samples within one or more source nodes in accordance with the precomputed routing sequences [0042-0043]
- Route the one or more data samples from the one or more source nodes (44) to one or more corresponding destination nodes (48) through the mesh
- Reorder the one or more data samples within the destination nodes (48), whereby the data samples are transmitted during a correct time-slot.

- In reference to claim 10, as best understood

Dally further teaches hitless switching or routing the packets in a substantially conflict-free manner. [0042]

- In reference to claim 11

In Figure 5, Dally further teaches utilizing store-and-forward routing.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 5 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dally (US 2001/0033569) in view of Carvey et al. (US 6934471)

- In reference to claim 5 and 20

Dally teaches a system and method that covers substantially all limitations of the parent claim.

Dally does not explicitly teach the receiver and the transmitter comprises a serializer/deserializer.

In Figure 8, Carvey et al. teaches that the TSI comprises a serializer/deserializer.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of Dally to include implementing the input TSI and output TSI with the serializer/deserializer as taught by Carvey et al. because it would allow data frames destined for the same output to be reordered.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dally (US 2001/0033569) in view of Zheng ("A systolic architecture for sorting an arbitrary number of elements").

- In reference to claim 12

Dally teaches a system and method that covers substantially all limitations of the parent claim.

The combination of Carvey et al. and Flanagan et al. does not teach performing systolic sorting on the data.

Zheng et al. teaches utilizing systolic sorting to sort an arbitrary large data set of N elements. (abstract)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the method of Dally to include performing systolic sorting on the data as taught by Zheng et al. because it would allow N elements to be sorted in θ(N/p log N/p) time without memory access conflicts.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dally (US 2001/0033569) in view of Carpinelli et al. (Applications of Edge-Coloring Algorithms to Routing in Parallel Computers)

- In reference to claim 14

Dally teaches a method that covers substantially all limitations of the parent claim.

Dally does not teach computing a graph-theoretic model for the routing sequences.

Carpinelli et al. teaches computing a graph-theoretic model for routing in a 3-stage Clos network (abstract)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the method of routing data in the 3-stage digital cross network Dally to include computing a graph-theoretic model for routing in a Clos network as taught by Carpinelli et al. because it would improve the efficiency of routing data in the 3-stage digital cross network.

Allowable Subject Matter

9. Claims 13 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments with respect to claims 1, 3-9, 11-12, 14-16, and 18-25 have been considered but are moot in view of the new ground(s) of rejection.

- In reference to claims 2, 10, and 17
- In the Remarks on pg. 3 of the Amendment, the Applicant contends that "substantially" does not render claims 2, 10, and 17 indefinite and that pg. 15, lines 19-22 of the specification describes the term "substantially conflict-free manner" to mean "as nearly conflict-free as possible".
- The Examiner respectfully disagrees. Pg.15, lines 19-22 of the specification does not state "as nearly conflict-free as possible". The term "substantially conflict-free manner" is not defined by the claim, the specification does not

provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure are:

- Raamot et al. (US 6108333) teaches a nonblocking synchronous digital hierarchy column cross-point switch.
- Suzuki (US 6240063) teaches a 3-staged time devious switch control system.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Roberts whose telephone number is (571) 272-3095. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BSR
03/17/2006

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